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AUTHOR Grannis, Joseph C.
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ABSTRACT

This paper discusses the creation of analytic categories that were applied to behavior in quite different, contrasting settings and that at the same time retained their ecological validity. In Project Follow Through, behavior stream observations were conducted on 20 second-grade children for an entire school day. To study the structure of behavior streams over time, a set of categories was constructed to look at "phase cognitive functioning," or the functions of cognition relative to the main task over successive phases of the behavior stream. In the Secondary Education Through Health (SETH) program, educationally disadvantaged high school seniors spent two mornings a week in a hospital work setting. The technique that evolved for observing the SETH program was a Setting and Behavior Instrument, which refers to functioning with people, data, and things in a particular setting. The data collection procedures used in these two studies represent different ways of defining higher and lower level cognitive functioning and different methods of observing and analyzing their natural occurrences. Between them, the studies appear to confirm the fruitfulness of examining the environmental conditions under which different levels of cognitive functioning occur. (BW)

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Observations of Students' Functioning in Contrasted Settings

Joseph C. Grannis
Teachers College, Columbia University

American Educational Research Association Annual Meeting
New Orleans, April 24, 1984

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Observations of Students' Functioning in Contrasted Settings

Joseph C. Grannis
Teachers College, Columbia University

Paper delivered at AERA Annual Meeting, New Orleans, 1984

The title of my paper indicates the central concern of two research projects that occupied me during most of the 1970s. Findings from both of these studies have already been published, but I shall present to you today some unpublished data from both. This paper will be more sharply focused if I call it observations of students' *cognitive* functioning in contrasted settings, adding the word 'cognitive' to the title. This should respond to what Paul Gump thought would particularly interest you in the methodology of my research. Of course, I continue to be engaged in research in the 1980s, but my present work on the ecology of students' stress in an urban middle school is not ready for publication.

A concern common to both of the studies I will discuss today was the creation of analytic categories that applied to behavior in quite different, contrasting settings and that at the same time retained what today is being called "ecological validity." This included categories to describe intellectual or cognitive functioning, along with categories to describe the environmental conditions of this functioning.

In Project Follow Through, where the first of these studies was carried out, behavior stream observations--i.e., continuous, ordinary language descriptions of a subject's activity through time--were conducted on two children for an entire school day in each of 10 second-grade classrooms, or for 20 school days altogether. The classrooms had been recommended as exemplars of four different pedagogical programs that characterized themselves as, respectively, direct instruction (Oregon), behavior analysis (Kansas), cognitive-social development (Bank Street), and open education (Creative Teaching Workshop, the one program outside Project Follow Through). Behavior stream observation had been selected to study the children's functioning in these different environments because of its orientation to behavior over time as well as its flexibility for describing the different conditions of this functioning. The children indeed pursued their activities under widely varying conditions, in some settings having access to manipulative materials and in others not, at times interacting with other children and at other

times pursuing their activity alone, etc. How would we analyze some 80 hours of detailed behavior stream observation transcript?

We had on different days in these same classrooms carried out observations of all the behavior settings that could be discriminated, using for this a technique that we adapted from Gump's pioneering research in classrooms(Gump, 1967) to code the settings that were occupied in a given room at fixed intervals of time throughout the day. The solution of what to do with the plethora of information in the behavior stream observations was our revising and expanding the categories of the behavior setting observations and overlaying them on the behavior stream transcripts. Thus over every thirty seconds, 9796 times, we asked ourselves who had selected a child's activity, was the activity paced by the teacher or by the child or both, what kinds of materials were involved in the child's activity, what were the expectations for interaction with other children, what was the actual interaction with other children, and so forth. Our examination of the behavior stream transcripts for initiation, maintenance or interruption, and termination of activities, essentially the behavior episode structure that Barker and Wright(1971) had elucidated, had called our attention to intriguing fluctuations in the on-task and off-task behavior of the children, or what we called "main task" and "alternative task" behavior. The behavior setting overlay now revealed that off-task behavior was found much more in certain settings than in others, not only across the different classrooms, but within the same classroom and indeed within the same behavior stream in the course of a day. Essentially, on-task behavior was found more in settings where the different conditions of a child's activity-- pacing, the choice of the activity, the access to feedback from materials, interaction with other children--were internally consistent from the standpoint of who controlled these conditions. Conversely, off-task or alternative behavior was found more in settings where the control of the conditions of the activity was inconsistent, for example, the pupil controlled pacing and interaction with other pupils, but the teacher controlled the options and feedback on the pupil's operations.

This much of the research is already familiar to those of you who have read my articles about it(Grannis, 1975, 1978). Now let me introduce some tables with new information. To study the structure of the behavior streams over time, we did not examine just the switching on and off of main and alternative behavior episodes. "Main" and "alternative task," or "on task" and "off" (colloquially), were actually

condensations of a larger set of categories that we constructed to look at what we called "phase cognitive functioning," or the functions of cognition relative to the main task over successive phases of the behavior stream. Each 30 second segment was considered in relation to the segments immediately surrounding it, up to the limit of the entire behavior episode containing it. In effect, we were looking for Markov chains, but the statistics I will present do not go beyond the percentages of time different cognitive functions were inferred. The categories we devised for this represented an array of functions derived both from theoretical sources, especially Werner(Barten and Franklin, 1978), and the manifest organization of the behavior streams themselves. This is where the concept of ecological validity must be invoked. We tried to define cognition in terms that squared with the organization of behavior in the behavior streams and in the environments we were studying. We wanted to be able to discriminate types of cognition that were meaningful to the sponsors of these environments.

Table 1 shows the percentages of time that the different categories of phase cognitive functioning applied to the children's behavior streams by program. The categories can be explained most easily from right to left. "Active alternative" refers to the cognitive orientation of phases that are part of an alternative or off-task episode, relative to the main task that typically starts earlier and persists longer. "Waiting, resting, gazing" is just that, while "provision, prepare" signifies getting materials and place ready for a main task or a subepisode within the task. "Directive" includes giving or receiving directions, and "perspective" includes looking at someone else perform a task related to self's task, counting or comparing pages finished in a workbook, and so forth. "Additive" means the cognizing of one thing, fact, or question after another, as in a recitation in which the organization of information over successive phases has not been made manifest. "Repetitive" applies when information and operations are repeated in successive phases, for example in writing ones name or the letter 'r' a number of times in succession. "Algorithmic" refers to the application of an algorithm in successive problems, for example addition problems or analogies, while "contingent" refers to phases in which the information and operations explicitly depend upon information and operations in prior phases. "Integrated," finally, means that the information and operations of a given phase are interdependent with information and operations of several other phases, for example in making a diorama or in writing a story. Three coders achieved 74% agreement among themselves in coding

Phase Cognitive Functioning.

The variable "Phase Cognitive Organization" condenses certain of these categories to reveal more explicitly the theoretical assumptions underlying them, and Table 2 shows the distribution of Phase Cognitive Organization by program. Behavior indicating high cognitive integration of successive phases of activity was observed for the largest percentage of time in the Creative Teaching Workshop, with Bank Street next. Medium integration, which we equated with algorithmic functioning, occurred most in the Oregon classrooms, followed by Kansas. These first two findings tend to confirm the validity of the analysis, as the Creative Teaching Workshop and Bank Street stressed integration in their rationales, while Oregon and Kansas emphasized the learning of skills and concepts. Looking at the rest of the table, however, we particularly notice that the largest percentage of time characterized by low integration of cognitive functioning occurred in the Bank Street classrooms, and the largest percentage of time in low orientation, or off task, occurred in the Kansas classrooms.

Further analysis associates these different levels of functioning with the different setting conditions under which they occurred irrespective of program. As a first step, we performed an analysis somewhat similar to one Berliner (1983) has reported, defining 10 abstract settings that among them account for virtually all of the observed time. I say "abstract" settings because they were defined in terms of different combinations of the variables pacing, group size, and differentiation of pupils' tasks within the group rather than, as Berliner has done, in terms of the more specific concerns of the settings. Table 3 shows the distribution of Phase Cognitive Organization among just five of these 10 setting types. (I am not showing data for all 10 setting types because we would get sidetracked in explaining the types themselves.) A "class" is a setting in which the whole class is paced by the teacher in a shared task or tasks that are the same or similar for individual pupils. A "section" is like a class except that it contains fewer pupils, while a "tutorial" is similar again except that it includes just one pupil with the teacher. A "partition" contains less than the whole class in own tasks that are the same or similar, but the pupils pace themselves, the teacher being not in the setting. Last, an "independent group" is a setting in which the pupils, usually a small group, have a *shared* task and pace themselves. You can see from Table 3 that high integration occurred for the greatest percentage of time in the independent group, that medium integration

(algorithmic functioning) occurred most in tutorials and sections, and that low integration was observed most in classes. It was because Bank Street made the most extensive use of the whole class setting that low integration functioning occurred most often in the Bank Street classrooms. Among the five setting types in Table 3, the partition had the greatest percentage of low orientation or off-task behavior. The inconsistent conditions that were particularly associated with low orientation or off-task behavior, summarized earlier, occurred the greatest proportion of time in the Kansas classrooms, though they tended to produce off-task behavior when they occurred in any of the classrooms. Further analyses in terms of the kinds of materials used and the concerns of the pupils' tasks throw still more light on the conditions associated with different levels of cognitive functioning in these classrooms.

You might be asking yourselves--many questions!, but particularly-- whether "high integration of cognitive functioning" as this study defined it was meant to be equivalent to, say, the higher levels of Bloom's taxonomy of cognitive objectives or behaviors(Bloom et al, 1956). I will answer no it wasn't, but there was some overlap. Story writing, art and construction or model building, cooking, and fantasy play accounted for a substantial fraction of the high integration functioning observed, and while they involved analysis, synthesis, and evaluation, these functions were not always as explicit in these activities as the taxonomy presumes. One sometimes does not know if cognitive organization is being attributed to the subject or to the activity structure that contains the behavior stream. This is a dilemma for ecological observation. It will be more apparent in the methods and the findings of the second study I would like to discuss, research in a high school experiential education program.

The method of observation and analysis used for the Follow Through research was highly productive but also very expensive. The large amount of time expended on each individual subject of a behavior stream observation meant not only that the total sample of subjects was very small but that we had to work a very long time before we could get meaningful results. At our most efficient pace, an hour of behavior stream observation entailed about twelve hours for transcription and coding. I was therefore looking for an opportunity to develop a method of observation that would combine features of behavior stream and behavior setting observation when I was asked to participate (beginning in 1975)

in the evaluation of a secondary school experiential education program that was located both in classrooms and in hospital work settings.

In the Secondary Education Through Health (SETH) program, as it was called, educationally disadvantaged high school seniors spent four days a week in various academic classrooms, math, science, social studies, English, and so forth, and two mornings a week in a hospital work setting affiliated with patient service, a laboratory, or community health service. A partial list of placements in which students had assignments included Home Care, Physical Therapy, Family Planning, Animal Research, Endoscopy, Respiratory Therapy, Central Supply, and Dental Care. Talk about blooming, buzzing confusion, the variations in these settings were considerably greater even than those between a direct instruction and an open classroom. Several months were spent observing in the various program settings to develop categories to describe what appeared to be the important features of the settings and their occupants' behavior.

The technique that evolved for observing in the SETH program was a Setting and Behavior Instrument (SBI) that I am delighted to be able to pass out here because I missed a typographical error in the copy that was prepared for publication with the article on this research in *Environment and Behavior* (Grannis, 1983). You can infer from the reference to a "Subject" on the top of each page that this observation focused on one subject at a time. The observer entered a setting and focused on a student who had been selected in advance. Using the largely blank SBI Note Sheet, the observer immediately started taking inventory of the people, data sources, and things in the setting, be it a classroom setting or one of the hospital work settings that were called "placements" in the program. After a couple of minutes of this orientation, when it was assumed that the observer had his or her speed up--the observer was also assumed to have visited the setting earlier--the formal observation began, with the observer continuing to take notes but now emphasizing the functioning of the focal subject with the people, data, and things of the setting, as well as other people's functioning in the activity with the subject, particularly the most active classroom or hospital staff person in the activity, the most active student peer, and the most active client or patient. At the end of 5 minutes, 7 minutes altogether in the setting at this point, the observer turned to the SBI Coding Form and coded the properties of the setting and behavior that he had just for the past 5 minutes taken notes on. This was done while the observer was still in the setting;

thus the function of the note taking was more to alert the observer to features of the situation, and to provide a record for later qualitative analysis, than its being the sole basis on which the actual coding was performed.

The SBI refers to functioning with people, data, and things. It takes advantage of a parallel that exists between how educational behavior is conceptualized in the *Taxonomy of Educational Objectives* (Bloom et al., 1956) and how work behavior is conceptualized in the *Dictionary of Occupational Titles* (U.S. Department of Labor, 1965). The one makes distinctions between a cognitive, an affective, and a psychomotoric domain of behavior, the other distinguishes between data, people, and things functioning. The parallel extends to the levels of behavior or functioning within each of these domains, especially the cognitive domain or data functioning. It was decided to use the *DOT* system to categorize individuals' functioning with data, people, and things, i.e., their cognitive, affective, and psychomotoric activity, in both the classroom and the work settings of the experiential education program.

The article published on this research presents findings from 1978 and 1979, when in each year we observed a sample of students whose achievement and sex were representative of the total population of students in the program. Each subject was observed in both a classroom and a hospital setting, so that each served as his or her own control. In order to get on to cognitive or data functioning, I will state here simply that subjects' social and physical functioning, both, were more varied and reached higher levels of control and complexity in the placement than in the classroom settings, in both years.

The meaning of "data" is somewhat ambiguous in the *DOT* system and remains so in the SBI scheme. Narrowly construed, it refers to symbolically encoded information, categorized by SBI as written expository (book or other narrative) material, tests or worksheets, encoded sources coordinated with physical and social functioning (e.g., a manual or charts, also machines or instruments with gauges), and oral communication. More broadly construed, the term also includes unencoded information about people, things, or events, of which SBI explicitly recognizes only one additional category--arrangements of things.

Data functioning is interpreted for SBI as truth-testing operations on information from any of the above sources. Though its level cannot always be inferred, some truth testing

is assumed to be involved in any activity, even where symbolically encoded information is not being used--for example, in examining something under a microscope or in making a bed.

The participants' data-related behaviors are rated as not observable (not enough information is available to make an inference about a participant's level of data functioning), low, medium, or high. Low data functions include comparing, retrieving or recall, and copying. Listening and reading are presumed to entail low-level data functioning, although subsequent performance in the setting or a postobservation interview could result in recoding this behavior at a higher level. Medium data functioning spans computing; applying an algorithm; arithmetic operations; extrapolating; summarizing; inference of implications, of consequences or effects, and of corollaries; conjecturing; compiling; and classifying.

High data functioning includes analyzing (evaluating data, making multiple interconnections of elements), innovating, coordinating (distributing and sequencing multiple operations or events), and synthesizing (putting together elements to form a whole; development of a complex communication to convey ideas, feelings, or experiences to others; and developing a plan of operation).

It should be obvious that the *Taxonomy of Educational Objectives* was used to amplify the distinctions between levels of data functioning that are made in the *Dictionary of Occupational Titles*.

Both the *Taxonomy* and the *DOT* assume that the higher levels of functioning include some, though not necessarily all, lower-level functions. In a 1977 study for which SBI was originally developed, this assumption led to recording the highest level of data functioning observed for each category of participant-- subject, staff, peer, and patient or client--in the setting during the time interval of the observation. In the 1978 study only the modal level of data functioning was recorded (e.g., the modal level for the most active member of staff present). This was a more conservative judgment that was made for exploratory purposes. In the 1979 study, both the highest and the modal levels of data functioning were recorded for each major participant during each five-minute observation interval.

What is at issue in the difference between a highest and a modal level of cognitive functioning observed? Consider two

examples, one from a classroom and one from a placement setting. The first was a social studies lesson in which the focal student was listening and occasionally responding to a teacher who was asking a series of questions about a political cartoon. The teacher asked the students to identify, one at a time, figures representing the United States, Britain, Germany, Woodrow Wilson and war. Following this, the teacher asked for an interpretation of the cartoon, which showed Wilson and Uncle Sam standing on one shore and facing away from Britain, Germany and War on the other shore. A student peer responded, and the teacher helped the student peer adjust the interpretation. During the several minutes involved here, the focal student supplied several short answers in chorus with other students. Was this student exposed to, did he experience, the teacher's cognitive functioning at a higher (medium or high) level of cognitive functioning throughout the episode, including the preparatory questions involving recognition and recall, or only at the time when the higher level cognition clearly emerged in interpretation? The observer coded medium level data functioning as the highest level reached by both the teacher and the student peer, low level data functioning as the highest level reached by the focal student who was the subject, and low level data functioning as modal for all three.

The second example took place in a dental surgery clinic. The focal student was manipulating a device to suction fluids from a patient's mouth while the surgeon, actually a medical student himself and just learning the operation, was struggling to remove a fragment of tooth that remained in a patient's jaw after the tooth had been broken for extraction. The patient was an elderly Hispanic woman who spoke no English, the student was black, and the surgeon was white. At a certain point in the observation, the patient whimpered slightly, and the student said very quietly to the surgeon, "Maybe the stuff is wearing off." "Nah," replied the surgeon, "it'll last for half an hour." A couple of minutes later, the patient started to cry, and the surgeon remarked, "Well, I guess we'll have to give you another shot." To what proportion of the observation should we extrapolate the medium level cognition evident in the student's inference that the stuff was wearing off?

Discrimination among the levels of data functioning proved to be very difficult, with only 64% agreement being obtained for staff's highest level of data functioning, and 78% for staff's modal level of data functioning. Subject's highest level of data functioning was coded with 78% agreement, and subject's modal level of data functioning was coded with 80% agreement.

I have now gotten to a point where I can present some data not published in *Environment and Behavior*. This is our 1979 findings for the highest levels of data functioning observed for various participants. Table 4 summarizes the 1978 and 1979 findings on data functioning, adding highest levels of data functioning observed to the findings previously published. Let us concentrate on the 1979 findings. We will be talking just about descriptive patterns in the data.

Looking first at the category "functioning not manifest," one sees a discrepancy between the highest levels observed and the modal levels, for staff, peer(s), and subject alike in both classrooms and placements. This reflects the fact that on some occasions enough information was available to the observer to infer a highest level of data functioning for the participant in question, but not enough to infer a modal level, i.e. modal for the whole five minute interval being coded.

Focusing next on staff's data functioning, staff were not present in placements for a greater proportion of time than in classes, which accounts for most of the difference between classes and placements in staff functioning not manifest; the modal levels for staff in both classrooms and placements shift down from the highest levels observed; less medium but more high level functioning was observed as the highest level for staff in placements than in classrooms, but more medium and high level functioning was observed for placement staff than classroom staff as the modal level of data functioning.

From similar comparisons it can be seen that peer data functioning was observed substantially less in placements than in classrooms, simply because peers were not present in the same setting with students most of the time in placements; that again there was a shift down between highest and modal levels of data functioning; and that both relative to the amount of time they were in the setting and absolutely peers were observed functioning with data at medium or high levels for more time in the classroom settings than in the placements. Finally, subjects' data functioning was inferred for most of the time observed; there was again some stepping down between the highest and the modal levels; and subjects' data functioning was observed at high or medium levels for slightly more time in classrooms than in placements.

As shown in Table 4 and discussed in the *Environment and Behavior* article, modal level of data functioning was substantially higher in the classrooms in 1978 than in 1979,

for staff, student peers, and subjects alike. The observations were made at a different time of the school year in the two years concerned, and the change reflected a difference in the curriculum emphasis of the classrooms between the two times observed. In 1978 especially, the findings suggested that the classroom and the placement settings complemented one another, as data functioning occurred at higher levels in the first, and social and physical functioning at higher levels in the second of these types of settings.

What conditions in the environment were associated with subjects' high or medium level data functioning? Analysis of the notes that accompany the coded data in each observation indicates that in the classrooms it was teachers' questions to subjects and assignments for subjects' interactions with peers that elicited higher level data functioning. In the placements two patterns could be discerned. In one, patients or clients were involved in the subjects' activity, and the subjects were variously explaining procedures or equipment, managing clients (for example, children in a health screening clinic), or discussing patients' situations with them. In the other pattern, the subjects were cooperating with staff in an activity, or were working parallel to staff in a related task, but in both cases were functioning with things in the presence of staff, and asked questions or made suggestions about the conduct of the activity. This second pattern was observed more in the earlier years of the SETH project than more recently, as subjects were given more difficult and responsible tasks at that time. It is tempting to speculate that students' working with physical things, including patients as sensate objects, reduced the social distance between staff and themselves so as to embolden the students to solicit staff in these ways, the things providing the students with direct feedback comparable to the feedback available to staff in the situation. Think again of the example of the student saying to the dental surgeon, "Maybe the stuff is wearing off." The student afterwards told the observer that he felt he had really been "in" on something in this operation.

The two studies that I have discussed today represent different ways of defining higher and lower level cognitive functioning and different methods of observing and analyzing their natural occurrences. Between them, the studies appear to confirm the fruitfulness of examining the environmental conditions under which different levels of cognitive functioning occur. This ecological approach to the observation of cognitive functioning has import both for evaluation of programs and for basic research on the development of

cognition. Further studies in this vein would be most welcome.

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Table 1

Phase Cognitive Functioning in the Classroom Behavior Streams of Children From Four Programs

	High Integration		Medium Integration	Low Integration		High Orientation		Provision, Prepare	Low Orientation		
	Integrated	Contingent	Algorithmic	Repetitive	Additive	Perspective	Directive	Provision, Prepare	Waiting, Resting, Gazing	Active Alternative	
Bank Street	697	262	416	195	709	62	105	496	206	282	3430 Raw
	20.3	7.6	12.1	5.7	20.7	1.8	3.1	14.5	6.0	8.2	100.0 % R
	48.4	47.5	16.9	34.4	44.7	31.2	38.5	42.0	38.6	27.9	35.0 % C
Creative Teaching Workshop	443	198	269	141	178	43	36	151	64	221	1744 Raw
	25.4	11.4	15.4	8.1	10.2	2.5	2.1	8.7	3.7	12.7	100.0 % R
	30.8	35.9	10.9	24.9	11.2	21.6	13.2	12.8	12.0	21.9	17.8 % C
Kansas	169	49	393	43	307	49	45	206	129	225	1615 Raw
	10.5	3.0	24.3	2.7	19.0	3.0	2.8	12.8	8.0	13.9	100.0 % R
	11.7	8.9	16.0	7.6	19.4	24.6	16.5	17.4	24.2	22.3	16.5 % C
Oregon	130	43	1380	187	392	45	87	328	134	281	3007 Raw
	4.3	1.4	45.9	6.2	13.0	1.5	2.9	10.9	4.5	9.3	100.0 % R
	9.0	7.8	56.1	33.0	24.7	22.6	31.9	27.8	25.1	27.8	30.7 % C
	1439	552	2458	566	1586	199	273	1181	533	1009	9796 Raw
	14.7	5.6	25.1	5.8	16.2	2.0	2.8	12.1	5.4	10.3	100.0 % R
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0 % C

Raw = frequency of 30 second segments of behavior stream observation transcripi
% R = percent row
% C = percent column

Table 2

Phase Cognitive Organization in the Classroom Behavior Streams of Children from Four Programs

	High Integration	Medium Integration	Low Integration	High Orientation	Provision, Prepare	Low Orientation	
Bank Street	959	416	904	167	496	488	3430 Raw
	28.0	12.1	26.4	4.9	14.5	14.2	100.0 % R
	48.2	16.9	42.0	35.3	42.0	31.6	35.0 % C
Creative Teaching Workshop	641	269	319	79	151	285	1744 Raw
	36.8	15.4	18.3	4.5	8.7	16.3	100.0 % R
	32.2	10.9	14.8	16.7	12.8	18.5	17.8 % C
Kansas	218	393	350	94	206	354	1615 Raw
	13.5	24.3	21.7	5.8	12.8	21.9	100.0 % R
	10.9	16.0	16.3	19.9	17.4	23.0	16.5 % C
Oregon	173	1380	579	132	328	415	3007 Raw
	5.8	45.9	19.3	4.4	10.9	13.8	100.0 % R
	8.7	56.1	26.9	28.0	27.8	26.9	27.8 % C
	1991	2458	2152	472	1181	1542	9796 Raw
	20.3	25.1	22.0	4.8	12.1	15.7	100.0 % R
	100.0	100.0	100.0	100.0	100.0	100.0	100.0 % C

Raw = frequency of 30 second segments of behavior stream observation transcript
% R = percent row
% C = percent column

Table 3

Phase Cognitive Organization in Five Types of Classroom Behavior Settings

	High Integration	Medium Integration	Low Integration	High Orientation	Provision, Prepare	Low Orientation	
Class	229	351	756	111	153	236	1836 Raw
	12.5	19.1	41.2	6.0	8.3	12.8	100.0 % R
	11.5	14.7	35.3	23.9	13.1	15.7	19.0 % C
Section	296	930	155	41	40	147	1609 Raw
	18.4	57.8	9.6	2.5	2.5	9.1	100.0 % R
	14.9	38.9	7.2	8.8	3.4	9.8	16.7 % C
Tutorial	39	156	22	19	14	15	265 Raw
	14.7	58.8	8.3	7.2	5.3	5.7	100.0 % R
	2.0	6.5	1.0	4.1	1.2	1.0	2.7 % C
Partition	393	453	708	119	338	494	2505 Raw
	15.7	18.0	28.3	4.8	13.5	19.7	100.0 % R
	19.8	19.0	33.0	25.6	28.9	33.0	25.9 % C
Independent Group	352	67	64	21	50	49	603 Raw
	58.4	11.1	10.6	3.5	8.3	8.2	100.0 % R
	17.7	2.8	3.0	4.5	4.3	3.3	6.2 % C

Raw = frequency of 30 second segments of behavior stream observation transcript
% R = percent row
% C = percent column (percents shown are for a larger table, which includes ten types of behavior settings altogether)

Table 4

Modal and Highest Levels of Data Functioning in SETH Classrooms and Placements

	Percent of Observations					
	Classrooms			Placements		
	1978	1979		1978	1979	
Total number of observations	22	72		22	72	
	Modal	Modal	Highest	Modal	Modal	Highest
Staff's data functioning:						
1. Functioning not manifest, or staff not in activity	14	10	6	50	31	29
2. Low	41	79	33	36	46	25
3. Medium	46	11	57	14	21	26
4. High	0	0	4	0	3	19
Peer's data functioning:						
1. Functioning not manifest, or peer(s) not in activity	0	0	0	68	67	65
2. Low	41	90	43	32	33	31
3. Medium	59	4	49	0	0	4
4. High	0	6	8	0	0	0
Subject's data functioning:						
1. Functioning not manifest	14	4	0	27	10	1
2. Low	50	89	65	68	80	78
3. Medium	36	1	29	4	10	18
4. High	0	6	6	0	0	3

OBI Note Sheet

Subject # _____ Date _____ Time _____ Location _____

SUBJECT	STAFF	PEERS	PATIENTS/CLIENTS	DATA	THINGS

Orientation

Observation

Questions for Interview

SBI CODING FORM

SUBJECT NO. __ __ __
DATE __/__/__ TIME __:__

COURSE _____

PLACEMENT 1. CLINIC. _____
2. LAB. _____
3. CLERICAL _____

I. INTERACTION FORMAT (check 1)
1. LECTURE
2. LECTURE/DEMONSTRATION ___
3. DISCUSSION ___
4. SUPERVISED BY, AND/OR COOPERATIVE C STAFF ___
5. INDEPENDENT OF STAFF(PRES.) ___
6. INDEPENDENT OF STAFF(ABSNT.) ___

II. PEOPLE IN SETTING
SCHOOL STAFF #___
HOSPITAL STAFF #___
PATIENTS #___
CLIENTS #___
STUDENT PEERS #___
TOTAL #___

III. ACTIVITY ORIENTATION (Check 1 for each person)
(Most active participant in setting)

	SCHOOL STAFF	HOSP. STAFF	CLIENT OR PATIENT	SUBJ.	PEER
1. NOT PRESENT					
2. TRANSITION/ WAITING					
3. ALTERN. TASK					
4. OBSERVES ONLY					
5. ACTIVE < 50%					
6. ACTIVE > 50%					
7. ACTIVE BUT NOT WITH SUBJECT					

IV. INITIATION (Check 1)
1. OTHER ONLY ___
2. SUBJ. & STAFF w/w.o. PEERS ___
3. SUBJ.& PEERS ___
4. SUBJ. ONLY ___

V. PEOPLE IN ACTIVITY
SCHOOL STAFF #___
HOSPITAL STAFF #___
PATIENTS #___
CLIENTS #___
STUDENT PEERS #___
TOTAL #___

VI. PEOPLE FUNCTIONS (Check 1 for each person)

Subject in relation to:	SCHOOL STAFF	HOSPITAL STAFF	CLIENT OR PATIENT	PEER
1. NOT IN ACTIVITY				
2. UNDER				
3. FOLLOW-COOP.				
4. EQUAL-COOP.				
5. LEAD-COOP.				
6. PARALLEL				
7. ABOVE				

VII. DATA IN ACTIVITY (Check all that apply)
1. NO SYMBOLICALLY ENCODED DATA ___
2. PURELY EXPOSITORY (WRITTEN) ___
3. TESTS; PRACTICE OR WORKSHEETS ___
4. SOURCES COORDINATED WITH PHYSICAL AND SOCIAL FUNCTIONING (e.g. manual, handbook or charts) ___
5. ORAL COMMUNICATION ___
6. ARRANGEMENT OF THINGS (e.g. visual patterns in microscope) ___

VIII. DATA FUNCTIONS (Check 1 Highest and 1 Modal for each person in activity)

	SCHOOL STAFF H	SCHOOL STAFF M	HOSPITAL STAFF H	HOSPITAL STAFF M	SUBJECT H	SUBJECT M	PATIENT OR CLIENT H	PATIENT OR CLIENT M	PEER H	PEER M
1. DATA FUNCTION NOT MANIFEST										
2. LOW										
3. MEDIUM										
4. HIGH										

IX. THINGS IN ACTIVITY
(Check all that apply)
1. NONE USED ___
2. HAND POWERED-U* ___
3. HAND POWERED-C* ___
4. OTHER POWERED-U* ___
5. OTHER POWERED-C* ___

X. THINGS FUNCTION (Check 1 for each person)

	SCHOOL STAFF	HOSPITAL STAFF	SUBJECT	PATIENT OR CLIENT	PEER
1. NOT USED					
2. LOW					
3. MEDIUM					
4. HIGH					

*U= Un-calibrated C= Calibrated